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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/673,170	09/30/2003	Manfred Schuster	4001-1154	9804
466	7590	11/01/2005	EXAMINER	
YOUNG & THOMPSON 745 SOUTH 23RD STREET 2ND FLOOR ARLINGTON, VA 22202			YUN, JURIE	
			ART UNIT	PAPER NUMBER
			2882	

DATE MAILED: 11/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/673,170

Applicant(s)

SCHUSTER, MANFRED

Examiner

Jurie Yun

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 4-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 4-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/22/05 has been entered.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The limitations conveyed by the term "parametric X-radiation" are unclear.

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claim 20 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it

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pertains, or with which it is most nearly connected, to make and/or use the invention.

The disclosure fails to teach how to process several phase contrast images to form a phase contrast computer tomogram.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1 and 4-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davidson (USPN 6,594,335 B2).

8. With respect to claims 1, 5, 12, 17, and 20, Davidson discloses (column 3, lines 13-15 & column 5, lines 24+) a phase contrast X-ray method and device for creating a phase contrast image of at least one object, comprising: at least one X-ray source (4) for generating X-radiation that has a known spatial coherence within a predetermined distance from the X-ray source, and at least one evaluation unit for converting the X-radiation that has passed through the object that is arranged within the predetermined distance from the X-ray source into the phase contrast image of the object, wherein the X-ray source has a line-shaped focus (X-Ray Line-Source, 4), a longitudinal extension of the line-shaped focus being aligned in a direction towards the object (7).

Davidson does not specifically disclose the X-ray source has an output within a range of 50 W up to and including 10 kW, and the X-radiation has a spatial coherence length within the predetermined distance from the X-ray source in a range from 0.05  $\mu\text{m}$

up to and including 10 um. However, Davidson clearly teaches a high flux X-ray source (column 10, lines 17+), of which high flux is interpreted to be greater than 50 W. With respect to the spatial coherence length, see column 3, lines 13+. The specific range would be obvious in view of the object being examined. The claims are rejected to the extent they are enabled.

9. With respect to claim 4, Davidson does not disclose the specifics of the X-ray source. However, X-ray tubes are known to be either transmissive or reflective, and it would have been obvious to one of ordinary skill in the art at the time the invention was made to use either one.

10. With respect to claim 6, Davidson discloses the X-ray source is constructed so as to produce X-radiation that has a specific temporal coherence (column 3, lines 13+ & column 9, lines 1+).

11. With respect to claims 7 and 8, Davidson discloses at least one monochromator for generating the temporal coherence of the X-radiation, and the evaluation unit has at least one analyzer for analyzing the X-radiation after it has passed through the object (column 4, lines 24+).

12. With respect to claims 9, 11, and 15, Davidson discloses the monochromator has at least one gradient multilayer reflector (column 8, line 44).

13. With respect to claim 10, this describes well known operation of multilayer reflectors. This is how they are made. See class 378, subclass 84.

14. With respect to claims 13 and 14, Davidson does not disclose the X-radiation forms an interference pattern after it has passed through the object that is detected for

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creating the phase contrast image, and wherein at least one of an X-radiation which is deflected when passing through the object for creating the phase contrast image, and an X-radiation which is non-deflected when passing through the object, is detected.

However, this is how phase contrast imaging works.

15. With respect to claim 16, Davidson does not disclose several phase contrast images are created by means of the X-radiation of different spatial coherences that are processed to an overall phase contrast image by means of an image processing unit. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to take more than one image and combine them in order to produce a more detailed image.

16. With respect to claim 18, Davidson does not disclose orientation of the object to the direction of propagation of the X-radiation varies for generating the different spatial coherence. However, the orientation is a function of what part of the internal structure is being imaged.

17. With respect to claim 19, Davidson discloses an object that consists of a material with a low absorption coefficient for the X-radiation is used (abstract). If most of the X-rays are absorbed, no phase contrast image could be formed.

### ***Response to Arguments***

18. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

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***Conclusion***

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jurie Yun whose telephone number is 571 272-2497.

The examiner can normally be reached on Monday-Friday 8:30-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on 571 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

 Jurie Yun  
October 20, 2005



Craig E. Church  
Primary Examiner